2. DIFFERENT TYPES AVAILABLE IN MARKET

WEARABLES FOR ANAPHYLAXIS

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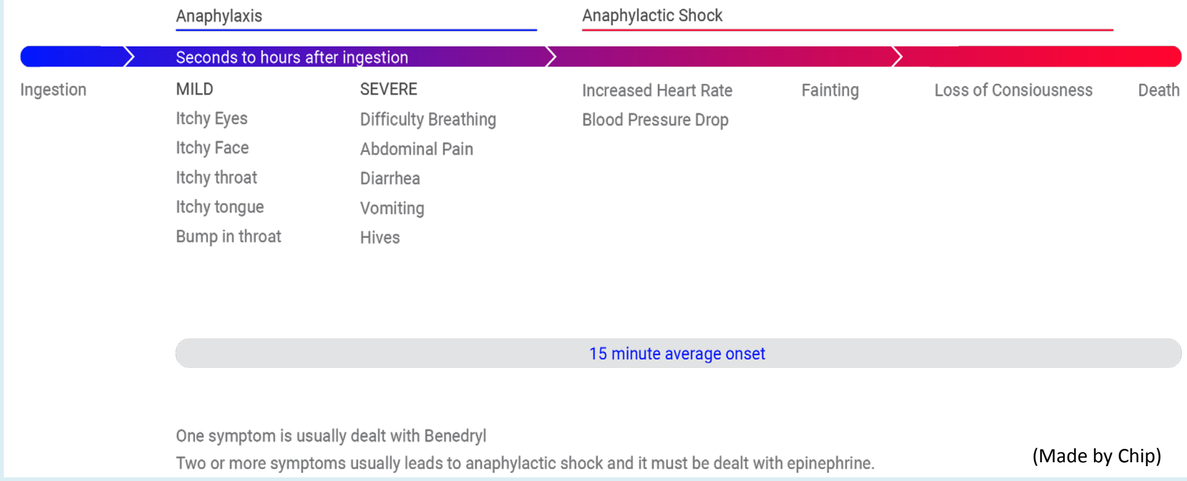
Background

Wearable medical technology is becoming a hot commodity. As these devices come to market, they have the potential to help both patients and clinicians monitor vital signs and symptoms. This technology is drawing serious attention and for good reason. Such devices will likely transform medical care in unimagined ways.

Early detection of anaphylaxis may be possible by physiologic monitoring with wearable devices

Measureable physiologic parameters: Blood flow, Allergens, Breathing (chest heaving), Temperature, Motion, Heart rate, Oxygen level, Sweat, Histamine level, Skin conductance (electrodermal activity).

Anaphylaxis is a severe allergic reaction that needs emergency medical treatment.



(Made by Chip)

Causes: Anaphylaxis can happen in seconds or even hours after contact with something you're allergic to. These may include certain foods, insect venom, latex, or medication. In rare cases, exercise and physical activity also can trigger it.

Current Treatment: cardiopulmonary resuscitation, epinephrine, oxygen, Intravenous (IV) antihistamines and cortisone, A beta-agonist (such as albuterol).

Wearable devices available in the market

PROJECT ABBY

The Wyss Institute and Keepsmilin4Abbie foundation

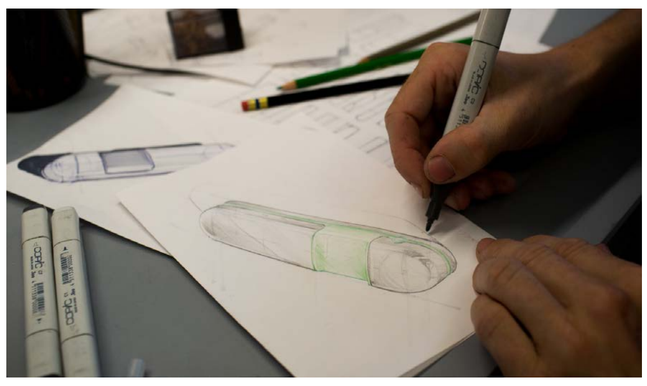
Measures: internal biochemical and physiological signals.

Structural components: Sensor, Computer algorithm to actuate EpiPen.

IN USE: technology is ready for licensing

Pro's: Actuates EpiPen.

Con's: Technology still in early stages with unclear sensitivity and specificity.



(Project ABBY)

AIBI

Made by Chip

Measures: histamine levels constantly

Structural components: light photo sensitive diodes, EpiPen auto injector.

IN USE: Available on market

Pro's: Auto injector for EpiPen. As per the device design, can also detect other parameters such as HR, temp.

Con's: Sweat can have an effect on its working. Since photosensitive diodes are being used, skin color pigmentation may alter the sensitivity and specific for some users.

(AIBI – Made by Chip)

ALLERGY AMULET

Wearable Allergy Detection Strip

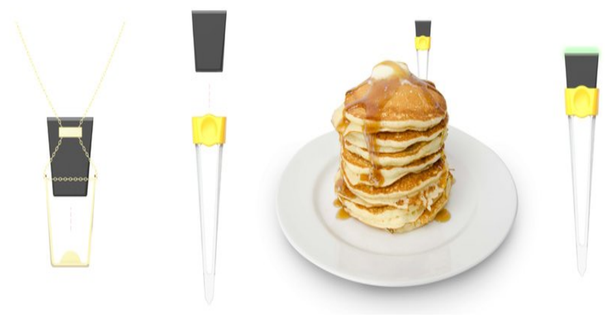
Measures: Presence of allergen in the food directly.

Structural components: 2-piece allergen kit. Disposable strip and a reader.

IN USE: As of now, the device being tested will only be able to detect peanuts.

Pro's: May prevent exposure.

Con's: Can be used only for one type of allergen(peanut).



(Wearable Allergy detection strip – Allergy Amulet)

SWOT ANALYSIS

STRENGTH	WEAKNESS
• We can know when an attack is coming. • Immediate action can be taken for rescue.	•Privacy. •Another challenge is figuring out how to integrate the data into patients' electronic medical records in a way that provides insight for doctors.
OPPORTUNITY	**THREAT**
• Include drugs along with the device. • Can try changing from battery powered to human body powered.	• Rapid changes in technology and demand. • Price competition.

Based on the SWOT analysis we propose to

- Increase sensitivity and specificity.
- Improve the speed and initiate treatment at an early stage of onset.
- Improve accuracy.

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